UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/909,809	07/23/2001	Mayumi Tomikawa	522.1921D3	6031

21171   7590   06/01/2007
STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER
DEJONG, ERIC S

ART UNIT	PAPER NUMBER
1631	

MAIL DATE	DELIVERY MODE
06/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	09/909,809	TOMIKAWA ET AL.
	Examiner	Art Unit	
	Eric S. DeJong	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _14 March 2007_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _16,17 and 23-26_ is/are pending in the application.

    4a) Of the above claim(s) _26_ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _16,17 and 23-25_ is/are rejected.

7)☒ Claim(s) _16,23 and 24_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☒ Certified copies of the priority documents have been received in Application No. _08/014,867_.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _03/14/2007_.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED OFFICE ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/14/2007 has been entered.

It is further noted that applicants response filed 03/14/2007 contains an amended claim set, including markings denoting insertions and deletions to the text of the claims, that is identical to the claim set submitted after final rejection, filed on 02/15/2007. Further, the amendment submitted after final was not entered onto the record, as reflected in the advisory action mailed 03/01/2007. Regarding the entry of amendments after the proper filing of a request for continued examination, MPEP 706.07(h)(III)(D) states:

> Any previously filed unentered amendments, and amendments filed with the RCE will normally be entered. Such amendments will be entered in the order in which they were filed in the absence of any specific instructions for entry. For example, if applicant files an amendment after final rejection which is denied entry by the examiner and applicant subsequently files an RCE with an amendment but the RCE is silent as to whether or not the previously filed after-final amendment should be entered, then the Office will enter both amendments in the order in which they were filed. If, however, applicant files an amendment after final rejection which is denied entry by the examiner and applicant subsequently files an RCE with an amendment including specific instructions that the previously filed after-final amendment is not to be entered, then the Office will enter the amendment filed with the RCE but will not enter the after-final amendment. If conflicting amendments have been previously filed, applicant should clarify which amendments should be entered upon filing the RCE (and fee).

Although applicants have not supplied specific instructions that the previously filed after-final amendment is not to be entered, said after-final amendment will not be entered onto the record in light of the amended claim set accompany the request for continued examination. For clarity of the record, the entry of both amendments filed on 02/15/2007 and 03/14/2007 would result in non-compliance with 37 CFR § 1.121(c)(2) which requires that all claim amendments must be submitted with markings to indicate the changes that have been made relative to the immediate prior version of the claims (emphasis added).

Claims 1-15 and 18-22 are canceled. Claims 16, 17, and 23-26 are pending in the instant application. Claim 26 is withdrawn. Claims 16, 17, and 23-25 are currently under examination.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copies have been filed in parent Application No. 08/014,867, now US Pat No. 6,370,479, filed on 02/08/1993.

Claim Objections

Claims 16, 23, and 24 are objected to because of the following informalities:

Claims 16, 23 and 24 each recite the term "r.m.s.d." (see for example, lines 43

and 45 of claim 16) and should be amended to read as --RMSD--.

Claims 16, 17, and 24 reach recite "........" (see for example line 45 of claim 16)

that is an improper use of periods and should be deleted from the instant claims.

Regarding the form of the claims MPEP § 608.01(m) states:

> "Each claim begins with a capital letter and ends with a period. Periods may not be used
> elsewhere in the claims except for abbreviations."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The previous rejection of claims 16, 17, and 23-25 under 35 U.S.C. 112, second

paragraph, as being indefinite is withdrawn in view of amendments made to the instant

claims and arguments presented by applicants.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

Claims 16, 17, and 23-25 are rejected under 35 U.S.C. 112, second paragraph,

as being indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention.

Claims 16, 23, and 24 each recite the limitations of "a molecule of the substance" and "a target structure" (see for example, lines 2 and 12 of claim 16). This causes the metes and bounds of the instant claims to be indefinite because it is unclear if "a target structure" is the structure of "a molecule of the substance" or, alternatively, if "a target structure" is a structure of a molecule other than "a molecule of the substance". Claims 17, and 25 are also included under this rejection due to their dependence from claims 16 and 24, respectively.

For the purpose of continuing examination, the limitation of "a target structure" has been construed to read as the structure of "a molecule of the substance".

Claims 16, 23, and 24 each recite the limitation "the input amino acid sequence" (see for example line 51 and lines 56 and 57 of claim 16). There is insufficient antecedent basis for this limitation in the claims. Claims 17, and 25 are also included under this rejection due to their dependence from claims 16 and 24, respectively.

For the purpose of continuing examination, the limitation of "the input amino acid sequence" has been construed to read on a sequence of a molecule of the substance.

Claims 16, 23, and 24 each recite the limitation "the amino acid sequence taken from an amino acid sequence database or a motif database" (see for example, lines 51 and 52 and lines 55 and 56 of claim 16). There is insufficient antecedent basis for this limitation in the claims. Claims 17, and 25 are also included under this rejection due to their dependence from claims 16 and 24, respectively.

For the purpose of continuing examination, the limitation of "the amino acid

sequence taken from an amino acid sequence database or a motif database" has been

construed to read on a sequence of a probe.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16, 17, and 23-25 are rejected under 35 U.S.C. 102(b) as being

anticipated by Johnson et al. (J Mol. Evol. (1990) pages 43-59).

The instant claims are drawn to methods and the related apparatus and

computer readable media of determining spatially similar portions of a substance

comprising amino acids by analyzing three-dimensional structures of the substance

comprising dividing the target structure into a plurality of target subsets based on

secondary structures, determining whether a correspondence is present between a first

points set of a plurality of probe subset structures and a second point set of a plurality of

target subset structures, generating a first and second tree structure for the first and

second point set, pruning the second tree structure in accordance with a predetermined

pruning procedure, determining whether the first and second point sets have a same

attribute and generating a correspondence between the first and second point set,

calculating a root mean square distance (RMSD) value between elements

corresponding between the first and second points set, determining whether the RMSD

value is less than or equal to a predetermined threshold, determining and displaying a

length of a longest common subsequence (LCS) between the target and the probe

structures. Further claimed embodiments include selecting and aligning a character

sequence of the target structure with probe structure having an optimum

correspondence and expressing the amino acid sequence from the probe by inserting a

blank correspondence.

Johnson et al. set forth methods and the related computer systems and software

for deriving phyletic relationships from three-dimensional structures of protein relying on

the relative spatial position of main chain alpha-carbon atoms(See Johnson et al.,

Abstract and throughout). Johnson et al. further teach that the disclosed methods were

taught as being performed on either a MICROVAX II or VAX 11/750 computer running

the VMS operating system and programs written in the C programming language (see

Johnson et al., page 44, col. 1, lines 43-47), which reads on the claimed dividing unit,

determining unit, and calculating unit recited in claim 23 and the computer readable

media recited in claim 24. Johnson et al. discloses that protein structures coordinates of

several proteins used in the study were obtained from the Brookhaven Protein

Database (see Johnson et al., page 44, col. 2, lines 1-7), which reads on target/ target

subset and probe/probe subset structures and obtained from an amino acid database or

motif database as recited in claims 16, 23, and 24.

Johnson et al. set forth an application of the disclosed method using human

immunoglobin proteins sets forth the separation of the immunoglobin domain structures

into subclasses and further performing a comparison of the subclassified domains (see

Johnson et al., page 47, col. 2 line 1 through page 48, col. 2, line 20), which reads on

determining whether a correspondence is present between a first points set of a plurality

of probe subset structures and a second point set of a plurality of target subset

structures as recited in instant claims 16, 23, and 24. Johnson et al. further teach that

the disclosed method includes an alignment of structures as a first stage of automated

homologous modeling procedure by a program MNYFIT that superimposes three-

dimensional structures under consideration, which reads on expression of substances

by a point set of a target subset and the point set of a probe subset wherein related

substance are rotated and moved so that the RMSD value is minimized as recited in

claims 16, 23, and 24. Further, this procedure is taught to iteratively update the

topologically equivalent positions until stability in both the number of equivalences and

the RMS distances over the topologically equivalent regions is obtained (see Johnson et

al., page 44, col. 2, lines 18-30), which reads on determining whether the first and

second point sets have a same attribute and generating a correspondence between the

first and second point set and calculating a root mean square distance (RMSD) value

between elements corresponding between the first and second points set as recited in

claims 16, 23, and 24. Johnson et al. define RMS as the square root of the averaged

Euclidean distances over all topologically equivalent pairs of alpha-carbon positions

from two structures and set forth a minimum threshold value of 3.5 A for each

superimposed structure (see Johnson et al., page 44, col. 1, lines 48-55), which reads

on determining whether the RMSD value is less than or equal to a predetermined

threshold as recited in claims 16, 23, and 24.

A plurality of tree structures (cladograms) were generated and displayed

following the structural alignment and sequence comparisons of the three dimensional

structures of immunoglobin domains (see Figure 3 and page 47, col. 1, line 15 through

page 48, col. 2, line 16), which reads on generating a first and second tree structure for

the first and second point set, pruning the second tree structure in accordance with a

predetermined pruning procedure as recited in claims 16, 23, and 24.The comparison

and display of related sequences (character sequences) of immunoglobin domains that

share structural similarities are further provided in Figure 4 (see also Johnson et al.,

page 48, col. 2, lines 17-24), which reads on determining and displaying a length of a

longest common subsequence (LCS) between the target and the probe structures as

recited in claims 16, 23, and 24. Further, the displayed sequences of aligned

immunoglobin sequences contain blank regions between positions of subsequences,

which reads on selecting, aligning, and expressing a character sequence of the target

structure with probe structure having an optimum correspondence and expressing the

amino acid sequence from the probe by inserting a blank correspondence as recited in

claims 17 and 25.

Double Patenting

Regarding use of the specification in obviousness-type double patenting

rejections, the MPEP states in section 804:

When considering whether the invention defined in a claim of an application is an

obvious variation of the invention defined in the claim of a patent, the disclosure of the

patent may not be used as prior art. This does not mean that one is precluded from all

use of the patent disclosure.

The specification can always be used as a dictionary to learn the meaning of a

term in the patent claim. In re Boylan, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968).

Further, those portions of the specification which provide support for the patent claims

may also be examined and considered when addressing the issue of whether a claim in

the application defines an obvious variation of an invention claimed in the patent. In re

Vogel, 422 F.2d 438, 441-42, 164 USPQ 619, 622 (CCPA 1970). The court in Vogel

recognized "that it is most difficult, if not meaningless, to try to say what is or is not an

obvious variation of a claim," but that one can judge whether or not the invention

claimed in an application is an obvious variation of an embodiment disclosed in the

patent which provides support for the patent claim. According to the court, one must first

"determine how much of the patent disclosure pertains to the invention claimed in the

patent" because only "[t]his portion of the specification supports the patent claims and

may be considered." The court pointed out that "this use of the disclosure is not in

contravention of the cases forbidding its use as prior art, nor is it applying the patent as

a reference under 35 U.S.C. 103, since only the disclosure of the invention claimed in the patent may be examined."

Claims 16, 17 and 23 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13, 14, 24, and 25 of copending Application No. 09/910,071. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claims are drawn to a generic method for analyzing three dimensional structures comprising dividing point sets from three dimensional coordinates, generating a combination of correspondence satisfying a restriction condition, determining a degree of similarity between structures and calculating a root mean square distance. The instant claims are more narrowly drawn to a method for analyzing three dimensional structures comprising further generating a first and second tree structure, pruning the second tree structure, and determining the optimum correspondence between the elements. However, the disclosure of copending application No. 09/910,071 teaches a preferred embodiment of restriction conditions that further comprises the steps of generating a first and second tree structure, pruning the second tree structure, and determining the optimum correspondence of the longest common subsquence between structures (see the instant specification of and the specification of copending application No. 09/910,071, pages 8 line 21 through page 9, line 19 and page 54, line 13 through page 55, line 7).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 16, 17 and 23-25 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5, 9, 21, and 25-27 of copending Application No. 09/910,054. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claims are narrowly drawn to a method for analyzing three dimensional structures comprising dividing point sets from three dimensional coordinates, generating a combination of correspondences between amino acid sequence structures, generating a decision tree having at least one retrieval path, pruning the retrieval path, determining a degree of similarity between structures, calculating a root mean square distance between structures, and displaying structures based on the generated combination of correspondences. The instant claims that are generically drawn to a method for analyzing three dimensional structures comprising further generating a first and second tree structure, pruning the second tree structure, determining the optimum correspondence between the elements, and displaying longest common subsequences shared between corresponding structures. However, the disclosure of copending application No. 09/910,054 teaches a preferred embodiment of a tree structures and the pruning thereof that comprises decision trees and retrieval paths as set forth in the copending claims (see the instant specification of and the specification of copending application No. 09/910,054, page 30, line 30 through page 37, line 25).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 24 is provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claim 22 of copending Application No.

11/258,174. Although the conflicting claims are not identical, they are not patentably

distinct from each other because the copending claim is drawn to a generic apparatus

for analyzing three dimensional structures comprising a first unit to divide a point set

into a plurality of subsets, a second unit to generate a combination of correspondences

satisfying a restriction condition, and a third unit to calculate a root mean square

distance between elements corresponding between in the combination of

correspondences generated by said second unit. The copending claim would be

anticipated by instant claim 23 that is more narrowly drawn to an apparatus for

determining spatially similar portions of a substance by analyzing three-dimensional

data comprising a dividing unit to divide a target structure into a plurality of target

subsets, a determining unite that generates a first and second tree structure and

determining whether a first and second point set share an attribute, and a calculating

unit to calculate a root mean square distance between elements corresponding between

a first and second point set.

This is a provisional obviousness-type double patenting rejection because the

conflicting claims have not in fact been patented.

Response to Arguments

Applicant's arguments with respect to claims 16, 17, and 23-25 have been

considered but are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric S. DeJong whose telephone number is (571) 272-6099. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shukla Ram can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eric S DeJong
Examiner
Art Unit 1631